

CLAIMS

[1] A lens barrel used for an imaging device capable of converting an optical image of an object into an electrical image signal, the lens barrel comprising:

an imaging optical system for forming the optical image of the object;

a focus lens unit which is included in the imaging optical system and capable of changing an object distance by moving in a direction parallel to an optical axis of the imaging optical system;

moving means for moving the focus lens unit in the direction parallel to the optical axis;

driving means for driving the moving means;

a first operating member which is of a cylindrical shape coaxial to the optical axis of the imaging optical system and manually operated in a rotational manner in order to drive the driving means to thereby move the focus lens unit by the moving means; and

a second operating member which is integrally provided in the first operating member, and operated in order to switch between a state of allowing a manual rotating operation of the first operating member and a state of preventing the manual rotating operation.

[2] A lens barrel used for an imaging device capable of converting an optical image of an object into an electrical image signal, the lens barrel comprising:

an imaging optical system for forming the optical image of
5 the object;

an aperture stop which is provided in a specified position on the optical axis of the imaging optical system and capable of changing an aperture of the imaging optical system;

driving means for operating the aperture stop;

10 a first operating member which is of a cylindrical shape coaxial to the optical axis of the imaging optical system and manually operated in a rotational manner in order to drive the driving means to thereby change the aperture of the aperture stop by the changing means; and

15 a second operating member which is integrally provided in the first operating member, and operated in order to switch between a state of allowing a manual rotating operation of the first operating member and a state of preventing the manual rotating operation.

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[3] An imaging device capable of converting an optical image of an object into an electrical image signal, the imaging device comprising:

the lens barrel according to any one of claims 1 and 2
25 including the imaging optical system for forming the optical image

of the object;

an image sensor for converting the optical image formed by the imaging optical system into the electrical image signal; and control means,

5 wherein the lens barrel further includes angle of rotation detecting means for outputting a signal in accordance with an angle of rotation of the first operating member, and

wherein when the first operating member is rotationally operated in a state where a rotating operation of the first
10 operating member is allowed by an operation of the second operating member, the control means generates said control signal for moving the focus lens unit based on the signal outputted by the angle of rotation detecting means.

15 [4] The imaging device according to claim 3, further comprising operation means for calculating a defocus amount of the imaging optical system,

wherein when an operation start is instructed in a state where the rotating operation of the first operating member is
20 prevented by the operation of the second operating member, the control means generates said control signal for moving the focus lens unit based on an operation result of the operation means.

[5] The imaging device according to claim 4, wherein the defocus
25 amount of the operation means is calculated based on the image

signal outputted by the image sensor.

[6] The imaging device according to claim 3,

wherein the imaging optical system is a zoom lens system,

5 wherein the imaging device further comprises

operation means for calculating a defocus amount of
the imaging optical system, and

focal length detection means for detecting a focal
length of the imaging optical system, and

10 wherein when the operation start is instructed in the state
where the rotating operation of the first operating member is
prevented by the operation of the second operating member, the
control means generates the control signal for moving the focus
lens unit based on the operation result of the operation means
15 and a detection result of the focal length detection means.

[7] An imaging device capable of converting an optical image of
an object into an electrical image signal, the imaging device
comprising:

20 the lens barrel according to any one of claims 1 and 2
including the imaging optical system for forming the optical image
of the object;

an image sensor for converting the optical image formed by
the imaging optical system into the electrical image signal; and

25 a control means,

wherein the lens barrel further includes angle of rotation detecting means for outputting a signal in accordance with an angle of rotation of the first operating member, and

wherein when the first operating member is rotationally
5 operated in a state where a rotating operation of the first operating member is allowed by an operation of the second operating member, the control means generates the control signal for changing an aperture of the aperture stop based on the signal outputted by the angle of rotation detecting means.

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[8] The imaging device according to claim 7, further comprising
a photometry means for detecting a quantity of light, and
an operation means for calculating an aperture of the
imaging optical system based on a detection result of the
15 photometry means,

wherein when the operation start is instructed in a state
where the rotating operation of the first operating member is
prevented by the operation of the second operating member, the
control means generates the control signal for changing the
20 aperture of the aperture stop based on an operation result of the operation means.

[9] The imaging device according to claim 8, wherein the photometry means is the image sensor.

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[10] The imaging device according to claim 7, further comprising
photometry means for measuring a quantity of light,
shutter speed setting means for setting a shutter speed,
and

5 operation means for calculating the aperture of the imaging
optical system based on the detection result of the photometry
means and a setting of the shutter speed setting means,

wherein when the operation start is instructed in the state
where the rotating operation of the first operating member is
10 prevented by the operation of the second operating member, the
control means generates the control signal for changing the
aperture of the aperture stop based on the operation result of
the operation means.

15 [11] The imaging device according to claim 10, wherein the
photometry means is the image sensor.